

WHAT IS CLAIMED:

1. A powder comprising hexagonal boron nitride particles having an aspect ratio of from about 50 to about 300.
- 5 2. The powder according to claim 1, wherein the particles have a surface area of at least about 20 m²/g.
- 10 3. The powder according to claim 2, wherein the particles have a surface area of at least about 40 m²/g.
4. The powder according to claim 3, wherein the particles have a surface area of at least about 60 m²/g.
- 15 5. The powder according to claim 1, wherein the particles have a characteristic diameter greater than about 1 micron.
6. The powder according to claim 1, wherein the particles have a D₁₀ diameter of between about 1 μm and about 2.5 μm.
- 20 7. The powder according to claim 1, wherein the particles have a thickness of no more than about 50 nm.
8. The powder according to claim 1, wherein the powder has a crystallization index of at least 0.15.
- 25 9. The powder according to claim 1, wherein the powder comprises no more than about 500 ppm B₂O₃.
- 30 10. The powder according to claim 1, wherein the powder comprises at least about 0.5 wt% B₂O₃.

11. A method of making delaminated hexagonal boron nitride powder comprising:

providing hexagonal boron nitride powder, and
milling the hexagonal boron nitride powder in a milling mixture under
5 conditions effective to produce delaminated hexagonal boron nitride powder having an aspect ratio of from about 50 to about 300.

12. The method according to claim 11, wherein said providing comprises high fire treating raw boron nitride powder.

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13. The method according to claim 11, wherein the hexagonal boron nitride powder has a crystallization index of at least 0.15.

14. The method according to claim 11, wherein the hexagonal boron
15 nitride powder is from about 5 wt% to about 30 wt% of the milling mixture.

15. The method according to claim 11, wherein the milling mixture comprises a milling media and a milling liquid.

20 16. The method according to claim 15, wherein the milling media is zirconia, steel balls, alumina, silicon nitride, silicon carbide, boron carbide, calcium oxide, or magnesium oxide.

17. The method according to claim 15, wherein the milling media has
25 an average diameter of from about 1 mm to about 20 mm.

18. The method according to claim 15, wherein the milling liquid is any liquid in which B_2O_3 is soluble.

30 19. The method according to claim 15, wherein the milling liquid is water, methanol, ethanol, propanol, butanol, isomers of low molecular weight alcohols, acetone, or supercritical CO_2 .

20. The method according to claim 15, wherein the milling liquid is from about 70 wt% to about 90 wt% of the milling mixture.

5 21. The method according to claim 11 further comprising:
adding a dispersant to the milling mixture.

22. The method according to claim 11 further comprising:
adding from about 1 wt% to about 20 wt% alcohol to the milling mixture.

10 23. The method according to claim 11, wherein the milling is carried
out for about 8 hours to about 48 hours.

24. The method according to claim 11, wherein the milling temperature
is no more than about 30 °C.

15 25. The method according to claim 11 further comprising:
dry milling the hexagonal boron nitride powder before or after said
milling.

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